AMENDMENT

In the Claims:

Please amend the claims, without prejudice, as follows:

1. (Currently Amended) A method to predict potential athletic performance in a human ~~mammal~~ comprising:

a) ~~obtaining one or more samples from a mammal;~~

~~b) analyzing the sample for the presence of one or more genetic variations in~~ determining whether a human has at least one copy of a 577R allele at the locus encoding amino acid number 577 of the α-actinin-3 (ACTN3) ~~gene~~ protein; and

~~c)~~ b) predicting the potential sprinting, strength, or power performance~~ athletic performance~~ of the human,

the presence of at least one copy of the 577R allele being positively associated with sprinting, strength, or power performance. ~~based on the presence of the one or more genetic variations wherein the athletic performance is selected from at least one of sprint performance, endurance performance, power performance and strength performance.~~

2-3. (Canceled)

4. (Currently Amended) The method of claim 1, further comprising screening the human ~~mammal~~ for a 1747 C>T single nucleotide polymorphism (SNP) in the ACTN3 gene.

5. (Currently Amended) The method of claim 1,~~further comprising~~ which comprises genotyping the human ~~mammal~~ at the ACTN3 locus.

6-9. (Canceled)

10. (Currently Amended) The method of claim 16, wherein the presence of ~~genotyping the mammal as~~ a 577RX genotype is positively associated with potential sprinting or power performance in female individuals.

11. (Canceled)

12. (Currently Amended) The method of claim 1, further comprising measuring the amount of ACTN3 protein present in the human ~~mammal~~'s skeletal muscle.

13. (Original) The method of claim 12, wherein the amount of ACTN3 protein is measured using an antibody specific for the ACTN3 protein.

14. (Currently Amended) The method of claim 1, further comprising measuring the amount of ACTN3 messenger RNA (mRNA) expressed in the human ~~mammal~~'s skeletal muscle.

15. (Currently Amended) The method of claim 4, further comprising identifying the 1747 C>T SNP alleles in the human ~~mammal~~'s genomic DNA by DNA sequencing, allele-specific hybridization, allele-specific amplification or restriction fragment length polymorphism analysis.

16. (Currently Amended) The method of claim 4, further comprising screening the human ~~mammal~~ for the presence of one or more additional SNPs in the ACTN3 gene.

17. (Canceled)

18. (Currently Amended) The method of claim 1, further comprising screening the human ~~mammal~~ for the presence of one or more genetic variations in at least one other gene.

19-23. (Canceled)

24. (Currently Amended) The method of claim 1, further comprising screening the human ~~mammal~~ using a test selected from the group consisting of VO_2 maximum, anaerobic threshold test, Wingate test, critical power, resting metabolic rate, body composition, speed testing, power testing, strength testing, flexibility testing, muscle biopsy, fast twitch fiber test and slow twitch fiber test.

25. (Currently Amended) The method of claim 1, further comprising selecting the human ~~mammal's~~ training program based on the presence of at least one copy of the 577R allele ~~the one or more genetic variations to optimize strength, power, endurance or a combination thereof~~.

26-28. (Canceled)

29. (Currently amended) The method of claim 1, further comprising selecting the human ~~mammal~~'s sprint/power type sport or event ~~or endurance sport or event~~ on the basis of the presence of ~~the one or more genetic variations~~ at least one copy of the 577R allele.

30-32. (Canceled)

33. (Currently amended) The method of claim 1 which comprises, ~~wherein analyzing the sample further comprises~~ analyzing DNA in a sample taken from the human ~~of the sample~~.

34. (Currently amended) The method of claim 1, wherein the ~~genetic variation~~ 577 R allele is a SNP.

35-40. (Canceled)

41. (New) A method to predict potential athletic performance in a human comprising:

a) determining whether the human has the genotype 577XX at the locus encoding amino acid number 577 of the human α-actinin-3 (ACTN3) protein; and

b) predicting the potential sprinting, strength or power performance of the human, the presence of the 577XX genotype being negatively associated with potential sprinting, strength or power performance.

42. (New) The method of claim 1, wherein the presence of a 577RR genotype is positively associated with potential sprinting, strength or power performance in males.

43. (New) The method of claim 1, wherein the presence of a 577RR genotype is positively associated with potential sprinting, strength or power performance in females.

44. (New) The method of claim 1, wherein the presence of a 577RX genotype is positively associated with potential sprinting, strength or power performance in females.